WHAT IS CLAIMED IS:

1. A method of processing a substrate, comprising:

forming a chemically amplified resist film on a substrate;

irradiating energy beam to the chemically amplified resist film to form a latent image therein;

moving a heating section relatively to the chemically amplified resist film to heat with the chemically amplified resist film forming the latent image; and,

forming an gas stream between the heating section and the chemically amplified resist film in the movement of the heating section, the direction of the air stream being reverse to the relatively moving direction of the heating section.

2. The method according to claim 1, wherein the range heated by the heating section has a slit shape.

3. The method according to claim 1, wherein the heating section cools the chemically amplified resist film except the range heated.

4. The method according to claim 3, wherein the substrate is placed on a stage, and said cooling is carried out to control the temperature of the stage.

5. The method according to claim 3, wherein said cooling is carried out in a manner of forming the gas stream on the chemically amplified resist film around

the heating range.

6. The method according to claim 1, wherein at least one of moving speed of the heating section to the substrate, heating temperature by the heating section, temperature of the gas stream, and gas stream speed is controlled to uniformly the heat treatment in the substrate surface.

7. The method according to claim 1, wherein at least one of moving speed of the heating section to the substrate, heating temperature by the heating section, temperature of the gas stream, gas stream speed and substrate temperature is controlled to uniformly the heat treatment in the substrate surface.

8. The method according to claim 1, wherein the energy beams is any of ultraviolet radiation, deep-ultraviolet radiation, vacuum ultraviolet radiation, electron beam and X rays.

9. A method of processing a substrate, comprising:

forming a chemically amplified resist film on a substrate;

irradiating energy beams to the chemically amplified resist film to form a latent image therein;

moving a heating section relatively to the chemically amplified resist film in order to carry out heating with respect to the chemically amplified resist film forming the latent image; and,

forming a liquid stream between the heating section and the chemically amplified resist film in the movement of the heating section.

10. The method according to claim 9, wherein the range heated by the heating section has a slit shape.

11. The method according to claim 9, wherein the heating section cools the chemically amplified resist film except the range heated.

12. The method according to claim 11, wherein the substrate is placed on a stage, and said cooling is carried out to control the temperature of the stage.

13. The method according to claim 11, wherein said cooling is carried out in a manner of forming the liquid stream on the chemically amplified resist film around the heating range.

14. The method according to claim 9, wherein water is used as the liquid.

15. The method according to claim 9, wherein at least one of moving speed of the heating section to the substrate, heating temperature by the heating section, temperature of the gas stream, and gas stream speed is controlled to uniformly the heat treatment in the substrate surface.

16. The method according to claim 9, wherein at least one of moving speed of the heating section to the substrate, heating temperature by the heating section, temperature of the gas stream, gas stream speed and

substrate temperature is controlled to uniformly the heat treatment in the substrate surface

17. The method according to claim 9, wherein the energy beams is any of ultraviolet radiation, deep-ultraviolet radiation, vacuum ultraviolet radiation, electron beam and X rays.

18. The method according to claim 9, wherein developer is supplied onto the chemically amplified resist film in a state that the liquid exists thereon.

19. A method of processing a substrate, comprising:

forming a liquid film containing solvent and solid content;

moving a heating section relatively to the liquid film to carry out heat treatment for forming a solid film consisting of the solid content; and

forming an gas stream between the heating section and the liquid film in the movement of the heating section.

20. The method according to claim 19, wherein the range heated by the heating section has a slit shape.

21. The method according to claim 19, wherein the heating section cools the liquid film and the solid film except the range heated.

22. The method according to claim 21, wherein the substrate is placed on a stage, and said cooling is carried out to control the temperature of the stage.

23. The method according to claim 21, wherein said cooling is carried out in a manner of forming the gas stream on the chemically amplified resist film around the liquid film and the solid film.

24. The method according to claim 19, wherein at least one of moving speed of the heating section to the substrate, heating temperature by the heating section, temperature of the gas stream, and gas stream speed is controlled to uniformly the heat treatment in the substrate surface.

25. The method according to claim 19, wherein at least one of moving speed of the heating section to the substrate, heating temperature by the heating section, temperature of the gas stream, gas stream speed and substrate temperature is controlled to uniformly the heat treatment in the substrate surface.

26. A heating apparatus comprising:

holding means configured to hold a substrate;

a heating section arranged in a state of facing the surface of the substrate held by the holding means, and selectively heating a partial range of the substrate;

moving means configured to relatively moving the heating section and the substrate in parallel to the main surface of the substrate;

stream forming means configured to form gas or liquid stream between the heating section and the

substrate;

processing condition determining means configured to determine processing conditions of a heating range heated by the heating section; and

control means configured to uniformly heat the substrate surface based on determination by the processing condition determining means.

27. The apparatus according to claim 26, wherein the stream forming means comprises a supply section and an gas sucker, which are arranged on both sides of the heating section in the relatively moving direction of the heating section and the substrate, the supply section supplies gas or liquid toward the gas sucker, and the gas sucker sucks gas or liquid supplied from the supply section.

28. The apparatus according to claim 27, wherein the supply section and the gas sucker are located adjacent to the heating section.

29. The apparatus according to claim 26, further comprising:

measurement means configured to measure the temperature of a heating range heated by the heating section,

the processing condition determining means determining processing conditions of the heating range in accordance with the measured result by the measurement means.

30. The apparatus according to claim 26, further comprising:

detection means configured to irradiate monitor light to the heating range, and detecting an intensity of light reflected from the heating range,

the processing condition determining means determining processing conditions of the heating range based on the detection result by the detection means

31. The apparatus according to claim 26, wherein the heating section heats the substrate using thermal conduction from a heater or radiation from a light source.

32. The apparatus according to claim 31, wherein the light source is any of lamp, light emitting diode and laser.

33. The apparatus according to claim 32, wherein the heating section irradiates light emitted from the light source to the substrate.

34. The apparatus according to claim 32, further comprising:

optical fiber connecting the light source and the heating section, and guiding light from the light source to the heating section.

35. The apparatus according to claim 32, wherein the light from the light source contains a wavelength equivalent to infrared-ray range.

36. The apparatus according to claim 26, wherein

the holding means includes temperature control means for controlling the substrate temperature.

37. The apparatus according to claim 36, wherein the temperature control means controls the substrate temperature based on determination information of the processing condition determining means.

38. The apparatus according to claim 26, wherein the stream forming means controls at least one of the speed of gas or liquid stream and the temperature of gas or liquid stream based on determination of the processing condition determining means.

39. The apparatus according to claim 26, further comprising:

a developer supply section arranged on the backward side in the relatively moving direction of the heating section, and movable relatively to the substrate while supplying developer thereto.

40. A method of forming a pattern, comprising:

forming a photo resist film on a substrate;

forming liquid film on the photo resist film surface;

irradiating energy beams to the photo resist film via the liquid film to form a latent image in the photo resist film; and

developing the photo resist film formed with the latent image,

wherein the surface of the photo resist film being

not dried until developing is carried out after the liquid film is formed.

41. The method according to claim 40, further comprising:

heating the photo resist film at the temperature holding the liquid film on the substrate between the forming the latent image and the forming liquid film.

an electric field being applied to the photo resist film in the heating.

42. The method according to claim 41, wherein the photo resist film is heated by heating the backside of the substrate, and the electric field application is voltage application to an electrode located on an upper portion of the photo resist film.

43. The method according to claim 41, wherein the electric field applied to the photo resist film is alternating current.

44. The method according to claim 40, wherein the wavelength of the energy beams is generally longer than 193 nm.

45. The method according to claim 40, wherein the wavelength of the energy beams is generally 157 nm, and the liquid film consists of fluorine oil.

46. The method according to claim 40, wherein the development is carried out in a manner of supplying developer to the photo resist film while relatively moving a developer supply section, which sucks the

supplied developer, to the photo resist film.

47. A method of forming a pattern, comprising:

forming a chemically amplified resist film on a substrate;

forming liquid film on the chemically amplified resist film surface;

irradiating energy beams to the chemically amplified resist film via the liquid film to form a latent image therein;

heating the chemically amplified resist film formed with the latent image, and

developing the chemically amplified resist film heated,

the surface of the photo resist film being not dried until developing is carried out after the liquid film is formed.

48. The method according to claim 47, wherein the wavelength of the energy beams is generally longer than 193 nm.

49. The method according to claim 47, wherein the wavelength of the energy beams is generally 157 nm, and the liquid film consists of fluorine oil.

50. The method according to claim 47, wherein the heating section heating part of the resist films is moved relatively to the substrate in the heating; and

forming a liquid stream between under surface of the heating section and upper surface of the chemically

amplified resist film in the moving.

51. The method according to claim 47, wherein the developing is carried out in a manner that the developer supply section moving relatively to the substrate supplies developer to the chemically amplified resist film, and sucks the supplied developer.

52. The method according to claim 47, wherein the pre-bake process is carried out using light irradiation.